

Source: [Legal](#) > [Area of Law - By Topic](#) > [Patent Law](#) > [Patents](#) > [U.S. Patents](#) > [Utility Patents](#)



Terms: **patno=5998786** ([Edit Search](#))

009526 (00) 5998786 December 7, 1999

UNITED STATES PATENT AND TRADEMARK OFFICE GRANTED PATENT

5998786

♦ [GET 1st DRAWING SHEET OF 6](#)

[Access PDF of Official Patent.](#) (Note: Cost incurred in a later step)

The Adobe Acrobat Reader must be installed on your computer to access Official Patent text. If you do not have this FREE reader, you can download it now from www.adobe.com

[Link to Claims Section](#)

December 7, 1999

Apparatus for securing CCD board at a fixed position within a range of motion

INVENTOR: Movaghar, Abdolreza, San Diego, CA; del Rosario, Josephine, San Diego, CA; Diel, Mark, San Diego, CA; Schmeling, David J., San Diego, CA

APPL-NO: 009526 (00)

FILED-DATE: January 20, 1998

GRANTED-DATE: December 7, 1999

ASSIGNEE-AT-ISSUE: Hewlett-Packard Company, Palo Alto, CA

ASSIGNEE-AFTER-ISSUE: January 16, 2001 - MERGER (SEE DOCUMENT FOR DETAILS)., HEWLETT-PACKARD COMPANY INTELLECTUAL PROPERTY ADMINISTRATION P.O. BOX 272400 FORT COLLINS COLORADO 80527, Reel and Frame Number: 011523/0469

LEGAL-REP: Potts, Jerry R.

PUB-TYPE: December 7, 1999 - Utility Patent having no previously published pre-grant publication (A)

PUB-COUNTRY: United States (US)

LexisNexis™ Total Research System [Practice Area Pages](#) [Change Client](#) [Options](#) [Feedback](#) [Sign Off](#) [?](#) [Help](#)

Search [Research Tasks](#) [Search Advisor](#) [Get a Document](#) [Shepard's®](#) [ECLIPSE™](#) [History](#) [?](#)

Sources [Guided Search Forms](#) [Command Searching](#)

[Legal](#) > [Area of Law - By Topic](#) > [Patent Law](#) > [Patents](#) > [U.S. Patents](#) > [Utility Patents](#)

Enter Search Terms

☒ Terms and Connectors ☐ Natural Language

patno=5998786

[?](#) **Search**

Use connectors to show relation of terms (cat or feline, jane w/3 doe) [more...](#)

+ Suggest Words and Concepts for Entered Terms

+ Restrict Search Using Document Segments

Optional: Restrict by Date

☒ No Date Restrictions ☐ From To

Search | [Research Tasks](#) | [Search Advisor](#) | [Get a Document](#) | [Shepard's®](#)
[Eclipse™](#) | [History](#) | [Delivery Manager](#) | [Practice Area Pages](#) | [Change Client](#) | [Options](#) | [Feedback](#) | [Signoff](#) | [Help](#)
[About LexisNexis](#) | [Terms and Conditions](#)

Copyright © 2003 LexisNexis, a division of Reed Elsevier Inc. All rights reserved.

WELCOME to QUESTEL.ORBIT- Your Guide to INTELLECTUAL PROPERTY

Query/Command : file pluspat

Selected file: PLUSPAT

Search statement 1

Query/Command : us5998786/pn

** SS 1: Results 1

Search statement 2

Query/Command : prt fu legalall max

1 / 1 PLUSPAT - @QUESTEL-ORBIT - image
PN - US5998786 A 19991207 [US5998786]
TI - (A) Apparatus for securing CCD board at a fixed position within a range of motion
PA - (A) HEWLETT PACKARD CO (US)
PAO - Hewlett-Packard Company, Palo Alto CA [US]
IN - (A) MOVAGHAR ABDOLREZA (US); DEL ROSARIO JOSEPHINE (US); DIEL MARK (US); SCHMELING DAVID J (US)
AP - US952698 19980120 [1998US-0009526]
FD - Cont. of US701619 19960822 [1996US-0701619]
Continuation of: US5736738
PR - US952698 19980120 [1998US-0009526]
US70161996 19960822 [1996US-0701619]
IC - (A) A47G-029/02 E04G-003/08 E06B-007/28
PCL - ORIGINAL (O) : 250239000; CROSS-REFERENCE (X) : 250234000
250504000R
DT - Basic
CT - US5367399; US5391009; US5463212; US5477047; US5736738
STG - (A) United States patent

AB - Apparatus for fixing the position of an optical sensor within a range of motion in relation to an optical apparatus. The fixing apparatus provides permits a range of motion through five degrees of freedom (DOF) during the securing process. The apparatus includes a housing for the optical assembly, a middle bracket, with the middle bracket secured to the optical apparatus. The range of motion is provided by a gimbal design in the housing and middle bracket which creates the five DOF. There are no screws involved in the fixing process to impart torques or forces to the parts being aligned and secured in position. An ultraviolet (UV) activated adhesive is used to secure the sensor housing to the middle bracket and the middle bracket to the optical scanner housing. The middle bracket is formed of a material transparent to UV light, and a high percentage of the UV light can pass through it to cure the adhesive applied between the parts. A vertical hole runs through tabs of both the housing and the middle bracket. The adhesive is applied into this region where it is constrained by the parts. The adhesive is a liquid during the alignment process which allows relative motion between the parts. When alignment is complete, the adhesive region is exposed to UV light which cures the adhesive into a solid vertical column, creating a form of chemical rivet. This chemical rivet provides a very strong

12/10/03

US 5,998,786

09/982327

mechanical interlock of the components in addition to the adhesive bonding of the components.

1 / 1 CRXX - @CLAIMS/RRX
AN - 3251028
PN - 5,998,786 A 19991207 [US5998786]
PA - Hewlett-Packard Co
PT - E (Electrical)
ACT - 20010116 REASSIGNED
MERGER

Assignor: HEWLETT-PACKARD COMPANY DATE SIGNED: 05/20/1998

Assignee: HEWLETT-PACKARD COMPANY INTELLECTUAL PROPERTY
ADMINISTRATION P.O. BOX 272400 FORT COLLINS, COLORADO 80527-240

Reel 011523/Frame 0469

Contact: HEWLETT-PACKARD COMPANY VALERIE BAKES INTELLECTUAL
PROPERTY ADMINISTRATION P.O. BOX 272400 FORT COLLINS, CO
80527-2400

UP - 2001-28
URAS- 2001-07-10

Query/Command : fam us5998786/pn

1 Patent Groups
** SS 2: Results 6

Search statement 3

Query/Command : famstate nonstop

1 / 6 PLUSPAT - @QUESTEL-ORBIT
PN - CN1183569 A 19980603 [CN1183569]
STG - (A) Unexamined application
TI - (A) Apparatus for securing CCD board at fixed position within
range of motion
PA - (A) HEWLETT PACKARD CO (US)
IN - (A) ROSARIO JOSEPHINE DEL (US); DIEL MARK (US); MOVAGHAR
ABDOLREZA (US)
IC - (A) G02B-027/32 G02B-027/62
PN2 - CN1092800 B 20021016 [CN1092800B]
STG2- (B) Patent
TI2 - (B) Equipment for securing CCD board at fixed position within
range of motion
PA2 - (B) HEWLETT PACKARD CO (US)
IN2 - (B) ROSARIO J D (US); DIEL M (US); MOVAGHAR A (US)
IC2 - (B) G02B-027/32 G02B-027/62
AP - CN97117750 19970822 [1997CN-0117750]
PR - US70161996 19960822 [1996US-0701619]

2 / 6 PLUSPAT - @QUESTEL-ORBIT

PN - DE69717362 D1 20030109 [DE69717362]
STG - (D1) Granted EP number in bulletin
OTI - (D1) Vorrichtung zum Befestigen einer CCD-Platte an einer festen Stelle und innerhalb eines Bewegungsbereichs
PA - (D1) HEWLETT PACKARD CO (US)
IN - (D1) DEL ROSARIO JOSEPHINE (US); SCHMELING DAVID J (US); DIEL MARK (US); MOVAGHAR ABDOLREZA (US)
IC - (D1) H04N-001/03
PN2 - DE69717362 T2 20030618 [DE69717362]
STG2- (T2) Trans. Of EP patent
OTI2- (T2) Vorrichtung zum Befestigen einer CCD-Platte an einer festen Stelle und innerhalb eines Bewegungsbereichs
PA2 - (T2) HEWLETT PACKARD CO (US)
IN2 - (T2) DEL ROSARIO JOSEPHINE (US); SCHMELING DAVID J (US); DIEL MARK (US); MOVAGHAR ABDOLREZA (US)
IC2 - (T2) H04N-001/03
AP - DE69717362 19970813 [1997DE-6017362]
PR - US70161996 19960822 [1996US-0701619]
UP - 2003-02

3 / 6 PLUSPAT - @QUESTEL-ORBIT - image
PN - EP0825757 A2 19980225 [EP-825757]
STG - (A2) Pub. Of applic. Without search report
TI - (A2) Apparatus for securing CCD board at a fixed position within a range of motion
OTI - (A2) Vorrichtung zum Befestigen einer CCD-Platte an einer festen Stelle und innerhalb eines Bewegungsbereichs
(A2) Appareil pour la fixation d'une carte CCD dans une position fixe et à l'intérieur d'un champ de mouvement
PA - (A2) HEWLETT PACKARD CO (US)
IN - (A2) DEL ROSARIO JOSEPHINE (US); SCHMELING DAVID J (US); DIEL MARK (US); MOVAGHAR ABDOLREZA (US)
IC - (A2) H04N-001/03
PN2 - EP0825757 A3 19991208 [EP-825757]
STG2- (A3) Publi. Of search report
TI2 - (A3) Apparatus for securing CCD board at a fixed position within a range of motion
OTI2- (A3) Vorrichtung zum Befestigen einer CCD-Platte an einer festen Stelle und innerhalb eines Bewegungsbereichs
(A3) Appareil pour la fixation d'une carte CCD dans une position fixe et à l'intérieur d'un champ de mouvement
PA2 - (A3) HEWLETT PACKARD CO (US)
IN2 - (A3) DEL ROSARIO JOSEPHINE (US); SCHMELING DAVID J (US); DIEL MARK (US); MOVAGHAR ABDOLREZA (US)
IC2 - (A3) H04N-001/03
PN3 - EP0825757 B1 20021127 [EP-825757]
STG3- (B1) Patent
TI3 - (B1) Apparatus for securing CCD board at a fixed position within a range of motion
OTI3- (B1) Vorrichtung zum Befestigen einer CCD-Platte an einer festen Stelle und innerhalb eines Bewegungsbereichs
(B1) Appareil pour la fixation d'une carte CCD dans une position fixe et à l'intérieur d'un champ de mouvement
PA3 - (B1) HEWLETT PACKARD CO (US)
IN3 - (B1) DEL ROSARIO JOSEPHINE (US); SCHMELING DAVID J (US); DIEL MARK (US); MOVAGHAR ABDOLREZA (US)
IC3 - (B1) H04N-001/03
LA - ENGLISH (ENG)
AP - EP97306160 19970813 [1997EP-0306160]
PR - US70161996 19960822 [1996US-0701619]
EC - H04N-001/03

12/10/03

US 5,998,786

09/982327

DS - DE FR GB
DT - Basic

1 / 1 LEGALI - ©EPO
PN - EP0825757 A2 19980225 [EP-825757]EP0825757 A3 19991208
[EP-825757]EP0825757 B1 20021127 [EP-825757]
AP - EP97306160 19970813 [1997EP-0306160]
ACTE- 19980225 EP/AK-A [+]
DESIGNATED CONTRACTING STATES:
DE FR GB

19991208 EP/AK-A [+]
DESIGNATED CONTRACTING STATES:
AT BE CH DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE

20000419 EP/17P-A [+]
REQUEST FOR EXAMINATION FILED
EFFECTIVE DATE: 20000218

20000816 EP/AKX-A [+]
PAYMENT OF DESIGNATION FEES
DE FR GB

20010328 EP/RAP1-A
APPLICANT REASSIGNMENT (CORRECTION)
OWNER: HEWLETT-PACKARD COMPANY, A DELAWARE CORPORATION

20020619 EP/17Q-A [+]
FIRST EXAMINATION REPORT
EFFECTIVE DATE: 20020510

20021127 EP/REG-A; GB/FG4D [+]
GB: EUROPEAN PATENT GRANTED
<GB>

20021127 EP/AK-A [+]
DESIGNATED CONTRACTING STATES:
DE FR GB

20030109 EP/REF-A
CORRESPONDS TO:
(DE 69717362 20030109 [DE69717362])

20030704 EP/ET-A [+]
FR: TRANSLATION FILED

20031119 EP/26N-A [+]
NO OPPOSITION FILED
EFFECTIVE DATE: 20030828

UP - 2003-47

4 / 6 PLUSPAT - ©QUESTEL-ORBIT - image
PN - JP10126592 A 19980515 [JP10126592]
STG - (A) Doc. Laid open to publ. Inspec.
TI - (A) CHARGE COUPLING DEVICE FIXING DEVICE
PA - (A) HEWLETT PACKARD CO
PAO - (A) HEWLETT PACKARD CO <HP>
IN - (A) MOVAGHAR ABDOLREZA; DEL ROSARIO JOSEPHINE; DIEL MARK;
SCHMELING DAVID J

IC - (A) H04N-001/028 H04N-001/19
AP - JP20270097 19970729 [1997JP-0202700]
PR - US70161996 19960822 [1996US-0701619]

5 / 6 PLUSPAT - @QUESTEL-ORBIT - image
PN - US5736738 A 19980407 [US5736738]
STG - (A) United States patent
TI - (A) Apparatus for securing CCD board at a fixed position within a range of motion
PA - (A) HEWLETT PACKARD CO (US)
PAO - Hewlett-Packard Company, Palo Alto CA [US]
IN - (A) MOVAGHAR ABDOLREZA (US); DEL ROSARIO JOSEPHINE (US); DIEL MARK (US); SCHMELING DAVID J (US)
IC - (A) A47G-029/02 E04G-003/08 E06B-007/28
AP - US70161996 19960822 [1996US-0701619]
PR - US70161996 19960822 [1996US-0701619]
EC - H04N-001/03
PCL - ORIGINAL (O) : 250239000; CROSS-REFERENCE (X) : 250234000
250504000R
DT - Corresponding document

1 / 1 LEGALI - @EPO
PN - US5736738 A 19980407 [US5736738]
AP - US70161996 19960822 [1996US-0701619]
ACTE- 19961115 US/AS02-A
ASSIGNMENT OF ASSIGNOR'S INTEREST
OWNER: HEWLETT-PACKARD COMPANY 3000 HANOVER STREET, LEGAL;
EFFECTIVE DATE: 19960820

19961115 US/AS02-A
ASSIGNMENT OF ASSIGNOR'S INTEREST
OWNER: MOVAGHAR, ABDOLREZA; EFFECTIVE DATE: 19960820

19961115 US/AS02-A
ASSIGNMENT OF ASSIGNOR'S INTEREST
OWNER: DEL ROSARIO, JOSEPHINE; EFFECTIVE DATE: 19960820

19961115 US/AS02-A
ASSIGNMENT OF ASSIGNOR'S INTEREST
OWNER: DIEL, MARK; EFFECTIVE DATE: 19960820

19961115 US/AS02-A
ASSIGNMENT OF ASSIGNOR'S INTEREST
OWNER: SCHMELING, DAVID J.; EFFECTIVE DATE: 19960820

19980804 US/AS99-A
OTHER ASSIGNMENTS
SILICON VALLEY BANK 3003 TASMAN DRIVE SANTA CLARA, CALIFORNIA
95054 * STORM TECHNOLOGY, INC. : 19980713 OTHER CASES: NONE;
AMENDMENT TO COLLATERAL ASSIGNMENT, PATENT MORTGAGE AND SECU

19980915 US/CC-A
CERTIFICATE OF CORRECTION
UP - 2003-22

6 / 6 PLUSPAT - @QUESTEL-ORBIT - image
PN - US5998786 A 19991207 [US5998786]

12/10/03

US 5,998,786

09/982327

STG - (A) United States patent
TI - (A) Apparatus for securing CCD board at a fixed position within a
range of motion
PA - (A) HEWLETT PACKARD CO (US)
PAO - Hewlett-Packard Company, Palo Alto CA [US]
IN - (A) MOVAGHAR ABDOLREZA (US); DEL ROSARIO JOSEPHINE (US); DIEL
MARK (US); SCHMELING DAVID J (US)
IC - (A) A47G-029/02 E04G-003/08 E06B-007/28
AP - US952698 19980120 [1998US-0009526]
PR - US952698 19980120 [1998US-0009526]
US70161996 19960822 [1996US-0701619]
PCL - ORIGINAL (O) : 250239000; CROSS-REFERENCE (X) : 250234000
250504000R
DT - Basic

LexisNexis™ Total Research System [Practice Area Pages](#) [Change Client](#) [Options](#) [Feedback](#) [Sign Off](#) [Help](#)

Search [Research Tasks](#) [Search Advisor](#) [Get a Document](#) [Shepard's®](#) **ECLIPSE™** [History](#)

Sources [Guided Search Forms](#) [Command Searching](#)

[Legal](#) > [Area of Law - By Topic](#) > [Patent Law](#) > [Multi-Source Groups](#) > **Patent Cases from Federal Courts and Administrative Materials** [i](#)

Enter Search Terms [?](#)

☒ Terms and Connectors ☐ Natural Language

5998786 or 5,998,786

[Search](#)

Use connectors to show relation of terms (cat or feline, jane w/3 doe) [more...](#)

[+ Suggest Words and Concepts for Entered Terms](#)

[+ Restrict Search Using Document Segments](#)

Optional: Restrict by Date

☒ No Date Restrictions ☒ ☐ From To

Search | [Research Tasks](#) | [Search Advisor](#) | [Get a Document](#) | [Shepard's®](#)
[Eclipse™](#) | [History](#) | [Delivery Manager](#) | [Practice Area Pages](#) | [Change Client](#) | [Options](#) | [Feedback](#) | [Signoff](#) | [Help](#)
[About LexisNexis](#) | [Terms and Conditions](#)

Copyright © 2003 LexisNexis, a division of Reed Elsevier Inc. All rights reserved.

No Documents Found!

No documents were found for your search (**5998786 or 5,998,786**).
Please edit your search and try again. You may want to try one or more of the following:

- Check for spelling errors.
- Remove some search terms.
- Use more common search terms.
- If applicable, look for all dates.

Edit Search


[About LexisNexis](#) | [Terms and Conditions](#)

Copyright © 2003 LexisNexis, a division of Reed Elsevier Inc. All rights reserved.

LexisNexis™ Total Research System [Practice Area Pages](#) [Change Client](#) [Options](#) [Feedback](#) [Sign Off](#) [Help](#)

Search [Research Tasks](#) [Search Advisor](#) [Get a Document](#) [Shepard's®](#) [ECLIPSE™](#) [History](#)

Sources [Guided Search Forms](#) [Command Searching](#)

[Legal](#) > [Area of Law - By Topic](#) > [Patent Law](#) > [Legal News](#) > [Patent, Trademark & Copyright Periodicals, Combined](#) 

Enter Search Terms

☒ Terms and Connectors ☐ Natural Language

5998786 or 5,998,786

 **Search**

Use connectors to show relation of terms (cat **or** feline, jane **w/3** doe) [more...](#)

☒ Suggest Words and Concepts for Entered Terms

☒ Restrict Search Using Document Segments

Optional: Restrict by Date

☒ No Date Restrictions ☒ From To

Search | [Research Tasks](#) | [Search Advisor](#) | [Get a Document](#) | [Shepard's®](#)
[Eclipse™](#) | [History](#) | [Delivery Manager](#) | [Practice Area Pages](#) | [Change Client](#) | [Options](#) | [Feedback](#) | [Signoff](#) | [Help](#)
[About LexisNexis](#) | [Terms and Conditions](#)

Copyright © 2003 LexisNexis, a division of Reed Elsevier Inc. All rights reserved.

No Documents Found!


No documents were found for your search (**5998786 or 5,998,786**).
Please edit your search and try again. You may want to try one or more of the following:

- Check for spelling errors.
- Remove some search terms.
- Use more common search terms.
- If applicable, look for all dates.

Edit Search

[About LexisNexis](#) | [Terms and Conditions](#)


[Copyright ©](#) 2003 LexisNexis, a division of Reed Elsevier Inc. All rights reserved.

 **LexisNexis™ Total Research System**

[Practice Area Pages](#) | [Change Client](#) | [Options](#) | [Feedback](#) | [Sign Off](#) | [Help](#)

Search | [Research Tasks](#) | [Search Advisor](#) | [Get a Document](#) | [Shepard's®](#)

Sources | [Guided Search Forms](#) | [Command Searching](#)

ECLIPSE™ | [History](#) | 

[News & Business](#) > [News](#) > [News, All \(English, Full Text\)](#) 

Enter Search Terms

☒ Terms and Connectors ☐ Natural Language

5998786 or 5,998,786

 **Search**

Use connectors to show relation of terms (cat or feline, jane w/3 doe) [more...](#)

+ Suggest Words and Concepts for Entered Terms

+ Restrict Search Using Document Segments

Optional: Restrict by Date

☒ No Date Restrictions  ☐ From To

Search | [Research Tasks](#) | [Search Advisor](#) | [Get a Document](#) | [Shepard's®](#)
[Eclipse™](#) | [History](#) | [Delivery Manager](#) | [Practice Area Pages](#) | [Change Client](#) | [Options](#) | [Feedback](#) | [Signoff](#) | [Help](#)
[About LexisNexis](#) | [Terms and Conditions](#)

Copyright © 2003 LexisNexis, a division of Reed Elsevier Inc. All rights reserved.

No Documents Found!

No documents were found for your search (**5998786 or 5,998,786**).
Please edit your search and try again. You may want to try one or more of the following:

- Check for spelling errors.
- Remove some search terms.
- Use more common search terms.
- If applicable, look for all dates.

Edit Search

[About LexisNexis](#) | [Terms and Conditions](#)

Copyright © 2003 LexisNexis, a division of Reed Elsevier Inc. All rights reserved.